Obſerv. V. *Of watered Silks, or Stuffs.*

Schem. 3. *Fig.* 2.

THere are but few *Artificial* things that are worth obſerving with a *Microſcope*; and therefore I ſhall ſpeak but briefly concerning them. For the Productions of art are ſuch rude miſ-ſhapen things, that when view'd with a *Microſcope*, there is little elſe obſervable, but their deformity. The moſt curious Carvings appearing no better then thoſe rude *Ruſſian* Images we find mention'd in *Purchas*, where three notches at the end of a Stick, ſtood for a face. And the moſt ſmooth and burniſh'd ſurfaces appear moſt rough and unpoliſht: So that my firſt Reaſon why I ſhall add but a few obſervations of them, is, their miſ-ſhapen form; and the next, is their uſeleſsneſs. For why ſhould we trouble our ſelves in the examination of that form or ſhape (which is all we are able to reach with a *Microſcope*) which we know was deſign'd for no higher a uſe, then what we were able to view with our naked eye? Why ſhould we endeavour to diſcover myſteries in that which has no ſuch thing in it? And like *Rabbins* find out *Caballiſms*, and *ænigmâs* in the Figure, and placing of Letters, where no ſuch thing lies hid: whereas in *natural* forms there are ſome ſo ſmall, and ſo curious, and their deſign'd buſineſs ſo far remov'd beyond the reach of our ſight, that the more we magnify the object, the more excellencies and myſteries do appear; And the more we diſcover the imperfections of our ſenſes, and the Omnipotency and Infinite perfections of the great Creatour. I ſhall therefore onely add one or two Obſervations more of *artificial* things, and then come to the Treaty concerning ſuch matters as are the Productions of a more curious Workman. One of theſe, ſhall be that of a piece of water'd Silk, repreſented in the ſecond Figure of the third *Scheme*, as it appear'd through the leaſt magnifying Glaſs. *A B.* ſignifying the long way of the Stuff, and *C D* the broad way. This Stuff, if the right ſide of it be looked upon, appears to the naked eye, all over ſo waved, undulated, or grain'd, with a curious, though irregular variety of brighter and darker parts, that it adds no ſmall gracefulneſs to the Gloſs of it. It is ſo known a propriety, that it needs but little explication, but it is obſervable, which perhaps every one has not conſidered, that thoſe parts which appear the darker part of the wave, in one poſition to the light, in another appears the lighter, and the contrary; and by this means the undulations become tranſient, and in a continual change, according as the poſition of the parts in reſpect of the incident beams of light is varied. The reaſon of which odd *phænomena*, to one that has but diligently examin'd it even with his naked eye, will be obvious enough. But he that obſerves it with a *Microſcope*, may more eaſily perceive what this *Proteus* is, and how it comes to change its ſhape. He may very eaſily perceive, that it proceeds onely from the variety of the *Reflections* of light, which is caus'd by the various *ſhape of the Particles*, or little protuberant parts of the thread that compoſe the ſurface; and that thoſe parts of the waves that appear

appear the brighter, throw towards the eye a multitude of ſmall reflections of light, whereas the darker ſcarce afford any. The reaſon of which reflection, the *Microſcope* plainly diſcovers, as appears by the Figure. In which you may perceive, that the brighter parts of the ſurface conſiſt of an abundance of large and ſtrong reflections, denoted by *a, a, a, a, a*, &c. for the ſurfaces of thoſe threads that run the *long way*, are by the Mechanical proceſs of watering, *creas'd* or *angled* in another kind of poſture then they were by the weaving: for by the weaving they are onely *bent round* the warping threads; but by the watering, they are *bent with an angle, or elbow*, that is inſtead of lying, or being bent *round* the threads, as in the third Figure, *a, a, a, a, a*, are about *b, b, b* (*b, b, b* repreſenting the ends, as 'twere, of the croſs threads, they are bent about) they are creas'd on the top of thoſe threads, with an *angle*, as in the fourth Figure, and that with all imaginable variety; ſo that, whereas before they reflected the light onely from one point of the round ſurface, as about *e, e, e*, they now when water'd, reflect the beams from more then half the whole ſurface, as *d e, d e, d e*, and in other poſtures they return no reflections at all from thoſe ſurfaces. Hence in one poſture they compoſe the brighter parts of the waves, in another the darker. And theſe reflections are alſo varied, according as the particular parts are variouſly bent. The reaſon of which creaſing we ſhall next examine; and here we muſt fetch our information from the Mechaniſm or manner of proceeding in this operation; which, as I have been inform'd, is no other then this.

They double all the Stuff that is to be water'd, that is, they creaſe it juſt through the middle of it, the whole length of the piece, leaving the right ſide of the Stuff inward, and placing the two edges, or ſilvages juſt upon one another, and, as near as they can, place the wale ſo in the doubling of it, that the wale of the one ſide may lie very near parallel, or even with the wale of the other; for the nearer that poſture they lie, the greater will the watering appear; and the more obliquely, or acroſs to each other they lie, the ſmaller are the waves. Their way for folding it for a great wale is thus: they take a Pin, and begin at one ſide of the piece in any wale, and ſo moving it towards the other ſide, thereby direct their hands to the oppoſite ends of the wale, and then, as near as they can, place the two oppoſite ends of the ſame wale together, and ſo double, or fold the whole piece, repeating this enquiry with a Pin at every yard or two's diſtance through the whole length; then they ſprinkle it with water, and fold it the longways, placing between every fold a piece of Paſtboard, by which means all the wrong ſide of the water'd Stuff becomes flat, and with little wales, and the wales on the other ſide become the more protuberant; whence the creaſings or angular bendings of the wales become the more perſpicuous. Having folded it in this manner, they place it with an interjacent Paſtboard into an hot Preſs, where it is kept very violently preſt, till it be dry and ſtiff; by which means, the wales of either contiguous ſides leave their own impreſſions upon each other, as is very manifeſt by the ſecond Figure, where 'tis obvious enough, that the wale of the piece *A B C D* runs parallel between the pricked lines *e f, e f, e f*, and as